SCREENING SITE INSPECTION REPORT
FOR
PEERLESS CHAIN COMPANY
WINONA, MINNESOTA
U.S. EPA ID: MND006158588
SS ID: NONE
TDD: F05-8910-019
PAN: FMN0237SB

SEPTEMBER 6, 1991

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HR-11-SSI

Ron Swenson, Supervisor
Site Response Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Site Name: Peerless Chain Company
Location: Winona, Minnesota
U.S. EPA ID#: MND006158588
Date: September 9 1991

Dear Mr. Swenson:

Attached is a copy of the screening site inspection report (SSIR) which has been prepared for the site listed above. This document is considered to be final and any changes and modifications based on comments made by your agency and the U.S. Environmental Protection Agency (U.S. EPA) during the 30 calendar day comment period have already been incorporated.

Because this is considered to be the final form of this document, this version of the SSIR may be distributed outside of your agency without prior notification and approval of U.S. EPA.

Please remember that the revised estimate of the Hazard Ranking System (HRS) score, which has already been furnished to your agency by **FIT** is still considered to be predecisional. Therefore, it should not be released. If you have any questions concerning the release of this information, please contact Ms. Jeanne Griffin, of my staff, at (312) 886-3007.

As was previously agreed upon, one set of original photographs for this SSIR has already been sent to your agency enclosed in the draft version of this SSIR. It is your agencies responsibility to see that these photographs are mounted in the photo logs enclosed in the final version of this SSIR. At this point the final version of the SSIR supersedes the draft version and the draft version of this SSIR should be removed from your agency files to ensure that the confidential draft version of this SSIR is not inadvertently released by your staff.

If you have any comments or questions, please contact Bill Messenger at (312) 353-1057.

Sincerely yours,

Thomas F. Geishecker

Thomas F. Geishecker
Technical Support Section
Enclosure
cc: Bill Messenger

SIGNATURE PAGE
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Prepared by: _____ for J.T. Date: 9/9/91
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Jerome D. Oskvarek
FIT Office Manager
Ecology and Environment, Inc.

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1. INTRODUCTION

Ecology and Environment, Inc., Field Investigation Team (FIT) was tasked by the United States Environmental Protection Agency (U.S. EPA) to conduct a screening site inspection (SSI) of the Peerless Chain Company (PCC) site under contract number 68-01-7347.

A review of FIT file information and discussion with Minnesota Pollution Control Agency (MPCA) personnel did not reveal how the PCC site was discovered.

The site was evaluated in the form of a preliminary assessment (PA) that was submitted to U.S. EPA. The PA was prepared by Donna Portner of MPCA and is dated March 26, 1985 (U.S. EPA 1985).

FIT prepared an SSI work plan for the PCC site under technical directive document (TDD) F05-8910-019, issued on October 12, 1989. The SSI work plan was approved by U.S. EPA on February 7, 1990. The SSI of the PCC site was conducted on July 11, 1990, under amended TDD F05-8910-019, issued on March 6, 1990.

The FIT SSI included an interview with a site representative, a reconnaissance inspection of the site, and the collection of five soil samples and two groundwater samples.

The purposes of an SSI have been stated by U.S. EPA in a directive outlining Pre-Remedial Program strategies. The directive states:

> All sites will receive a screening SI to 1) collect additional data beyond the PA to enable a more refined preliminary HRS [Hazard Ranking System] score, 2) establish priorities among sites most likely to qualify for the NPL [National Priorities List], and 3) identify the

> most critical data requirements for the listing SI step. A screening SI will not have rigorous data quality objectives (DQOs). Based on the refined preliminary HRS score and other technical judgement factors, the site will then either be designated as NFRAP [no further remedial action planned], or carried forward as an NPL listing candidate. A listing SI will not automatically be done on these sites, however. First, they will go through a management evaluation to determine whether they can be addressed by another authority such as RCRA [Resource Conservation and Recovery Act].... Sites that are designated NFRAP or deferred to other statutes are not candidates for a listing SI.
>
> The listing SI will address all the data requirements of the revised HRS using field screening and NPL level DQOs. It may also provide needed data in a format to support remedial investigation work plan development. Only sites that appear to score high enough for listing and that have not been deferred to another authority will receive a listing SI. (U.S. EPA 1988)

U.S. EPA Region V has also instructed FIT to identify sites during the SSI that may require removal action to remediate an immediate human health or environmental threat.

2. SITE BACKGROUND

2.1 INTRODUCTION

This section presents information obtained from SSI work plan preparation, the site representative interview, and the reconnaissance inspection of the site.

2.2 SITE DESCRIPTION

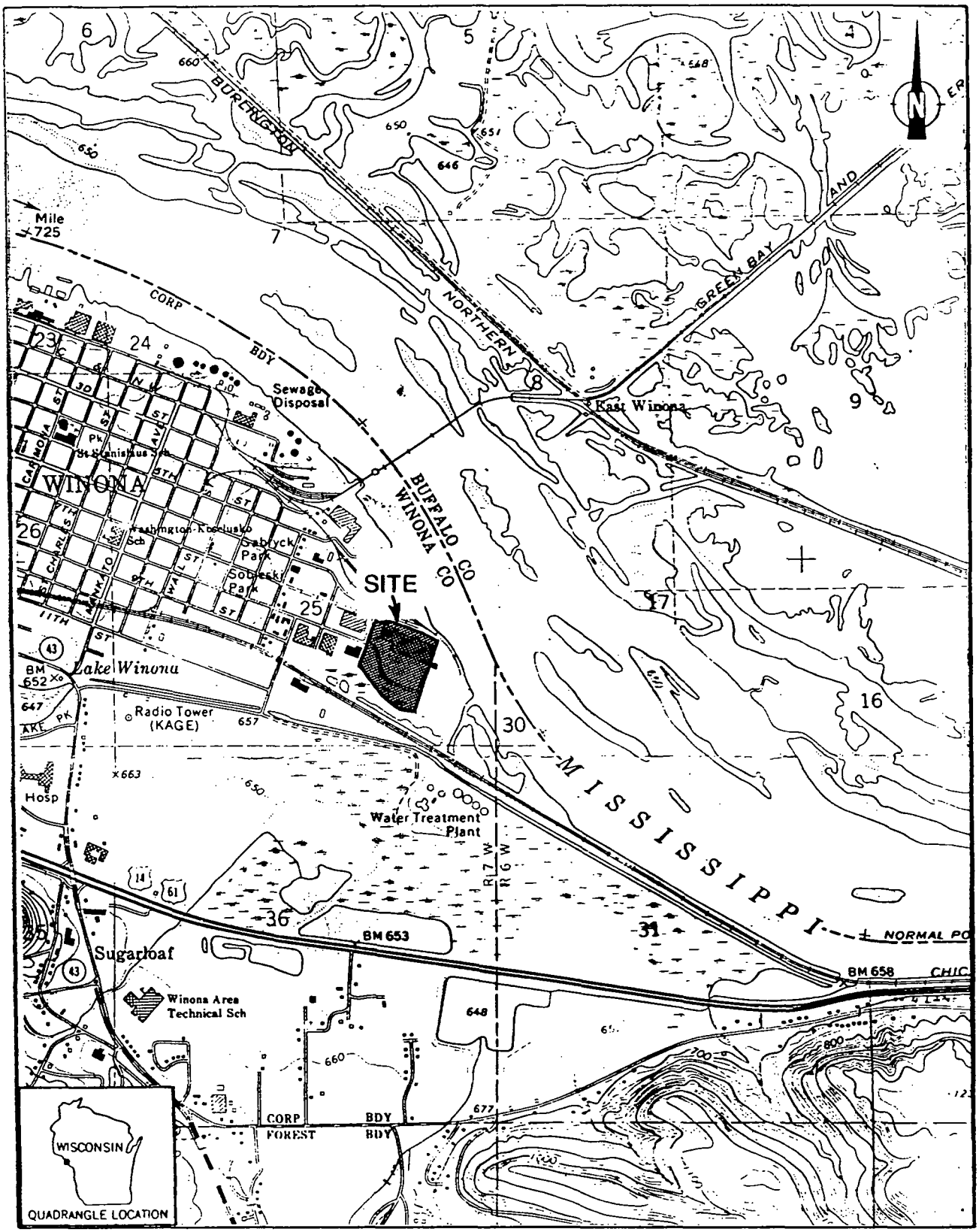
The PCC site is an active manufacturing facility that produces chain and wire. The site consists of approximately 38 acres of land located at the southeast edge of the city of Winona, in Winona County, Minnesota (center of SW1/4 sec. 25, T.107N., R.7W.) (see Figure 2-1 for site location). The PCC site is located along the western bank of the Mississippi River. A large wetland area is located in the southern portion of the site.

A 4-mile radius map of the PCC site is provided in Appendix A.

2.3 SITE HISTORY

The PCC site is owned by Corporate Property Association of New York, New York. Corporate Property Association leases the site to Bridgewater Resources Corporation of Beverly Hills, California, which is the parent company of Peerless Chain Company. Peerless Chain Company has been operating the PCC site since 1969, when the manufacturing plant was built. Prior to 1969, a meat-packing plant was present on-site (Etnier 1990). The meat-packing plant has since been demolished.

Peerless Chain Company's manufacturing operation generates various wastes, including pickle liquor, which is spent sulfuric acid and iron,



SOURCE: USGS, Winona East, WI-MN Quadrangle, 7.5 Minute Series, 1972.

SCALE
0 0.5 1 MILE

FIGURE 2-1 SITE LOCATION

zinc-cyanide process wastewater, acid-alkaline wastewater, and zinc-chromate wastewater. The spent pickle liquor is stored inside the manufacturing plant until its disposal. The spent pickle liquor is currently transported by Dallen Transport of Newport, Minnesota, to a sewage treatment facility in either Pine Island, Minnesota, or Milwaukee, Wisconsin. The zinc-chromate, acid-alkaline, and zinc-cyanide wastewaters are treated at the on-site plant and released to Winona's municipal wastewater treatment plant. According to the site representative, these wastewaters have always been disposed of in this manner (Etnier 1990). Peerless Chain Company has a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewaters into the municipal sewer system. The NPDES permit was issued in March 1988 and expires in January 1993.

Prior to approximately 1981, spent pickle liquor was neutralized with lime and landspread at a company-owned location approximately 6 miles south of Winona. MPCA allowed Peerless Chain Company to landspread its spent pickle liquor (Etnier 1990). However, MPCA does not have any record of pickle liquor disposal practices prior to the mid 1970s. MPCA officials believe it is possible that pickle liquor may have been disposed of at the PCC site. According to Richard Etnier, Plant Engineer for Peerless Chain Company, the neutralized pickle liquor had been landspread prior to 1981 at a company-owned landspread location situated south of Winona, not at the PCC site (Etnier 1990).

According to Etnier, there are no other investigations or regulatory-related activities taking place concerning the PCC site (Etnier 1990).

3. SCREENING SITE INSPECTION PROCEDURES AND FIELD OBSERVATIONS

3.1 INTRODUCTION

This section outlines procedures and observations of the SSI of the PCC site. Individual subsections address the site representative interview, reconnaissance inspection, and sampling procedures. Rationales for specific FIT activities are also provided. The SSI was conducted in accordance with the U.S. EPA-approved work plan with the following exceptions. Five on-site soil samples were collected instead of the proposed seven. Furthermore, a Winona municipal well and an on-site production well were sampled as part of the groundwater sampling procedures.

The U.S. EPA Potential Hazardous Waste Site Inspection Report (Form 2070-13) for the PCC site is provided in Appendix B.

3.2 SITE REPRESENTATIVE INTERVIEW

Jeff Taylor, FIT team leader, conducted an interview with Richard Etnier, Plant Engineer for Peerless Chain Company, at 8:10 a.m. on July 11, 1990, in an on-site office. The interview was conducted to gather information that would aid FIT in conducting SSI activities.

3.3 RECONNAISSANCE INSPECTION

Following the site representative interview, FIT conducted a reconnaissance inspection of the PCC site and surrounding area in accordance with Ecology and Environment, Inc. (E & E), health and safety guidelines. The reconnaissance inspection began at 10:20 a.m. on July 11, 1990, and included a walk-through of the site to determine appropriate

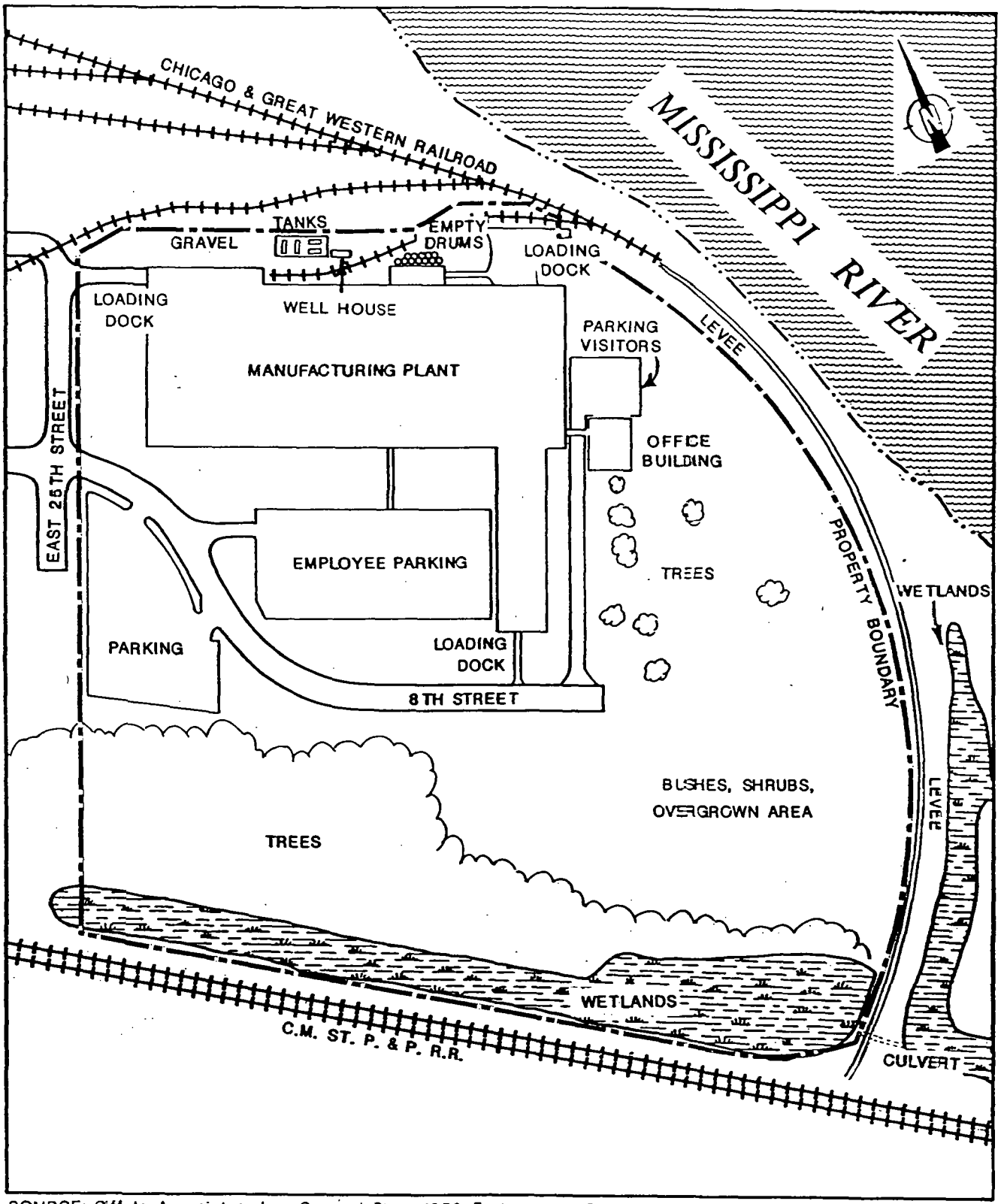
health and safety requirements for conducting on-site activities and to make observations to aid in characterizing the site. FIT also determined sampling locations during the reconnaissance inspection. FIT was accompanied by Etnier during the reconnaissance inspection.

Reconnaissance Inspection Observations. The PCC site is located in the southeastern area of the city of Winona. The site consists of approximately 38 acres of land. The PCC site is bound by Chicago, Milwaukee, St. Paul, and Pacific Railroad tracks on the south, a Mississippi River levee on the east, East 25th Street on the west, and a Chicago and Great Western Railroad spur on the north (see Figure 3-1 for site features). The site is accessible via 8th Street (aka Sanborn Street). Eighth Street enters the site from the west and extends east across the site. Two parking lots are located in the west-central portion of the site on either side of 8th Street.

The manufacturing plant is located in the northwest portion of the site. The plant has three loading docks, one each at the southeast, northeast, and northwest corners of the plant. A well-kept lawn with some shrubs and trees is located adjacent to the east, south, and west sides of the manufacturing plant. The area north of the plant is covered with gravel. Four aboveground tanks were located in the gravel-covered area. Two of the tanks contained propane. The other two tanks each had a capacity of approximately 5,000 gallons. One of the 5,000-gallon tanks contained sulfuric acid, and the other contained muriatic acid. All four tanks were situated on a concrete pad. The pad is entirely fenced, and is the only area on-site that is fenced.

A spur of the Chicago and Great Western Railroad enters the site at its northeast corner and runs along the north side of the manufacturing plant. Approximately 25 empty hydraulic oil drums lying on their sides were observed on the ground along the northeast side of the plant.

The southeast portion of the site is overgrown with vegetation, primarily bushes and shrubs. The site is well kept except for this overgrown area. The southernmost portion of the site is a wetlands area surrounded by a wooded area. A drainage culvert extends from the southeast corner of the wetlands area and under a levee to the Mississippi River. The levee is present along the west bank of the Mississippi



SOURCE: Giffels Associates, Inc. General Plan, 1979; Ecology and Environment, Inc. 1990.

SCALE

0 200 400 600 800 1,000 FEET

FIGURE 3-1 SITE FEATURES

River, just outside the site's eastern boundary. The levee extends down to the southeast corner of the site.

Two sets of Chicago, Milwaukee, St. Paul, and Pacific Railroad tracks extend in a northwest-southeast direction just south of the site. These tracks form the site's southern border. No security system is present to limit site access (Etnier 1990).

FIT photographs from the SSI of the PCC site are provided in Appendix C.

3.4 SAMPLING PROCEDURES

Samples were collected by FIT at locations selected during the reconnaissance inspection to determine whether U.S. EPA Target Compound List (TCL) compounds or Target Analyte List (TAL) analytes were present at the site. The TCL and TAL are included with corresponding quantitation/detection limits in Appendix D.

On July 11, 1990, FIT collected five on-site soil samples, including one potential background sample, and two groundwater samples. One of the groundwater samples was collected from an on-site production well, and the other was collected from a Winona municipal well. The site representative accepted offered portions of the FIT-collected on-site samples.

Soil Sampling Procedures. Soil sample S1 was collected from a low area just south of 8th Street (see Figure 3-2 for soil sampling locations). Sample S1 was collected from an area that may collect surface water runoff. Soil sample S1 was collected at a depth of approximately 1 foot with a hand trowel.

Soil sample S2 was collected from the area of overgrown vegetation. Sample S2 was collected at a depth of approximately 2 feet with a posthole digger. This area may have been used for the disposal of wastes generated on-site. Soil sample S3 was collected from a sampling location approximately 5 feet west of the four aboveground tanks. Sample S3 was collected at a depth of approximately 2 feet with a posthole digger and a shovel. This sample was collected to determine whether there were any spills or leakage in the area near the four tanks. Soil sample S4 was collected from the northwest portion of the site near the loading dock on the west side of the plant. Sample S4 was collected at a depth

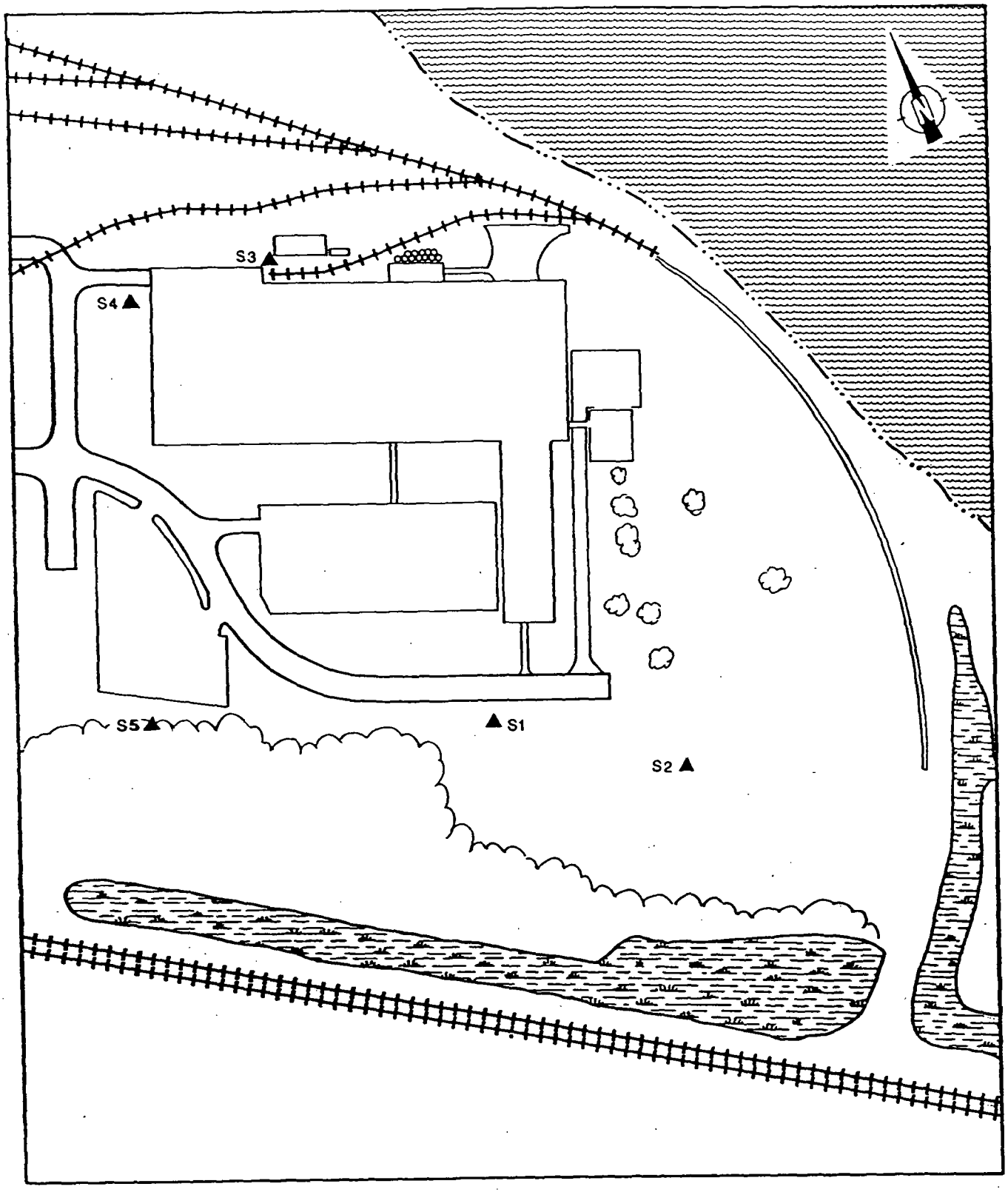


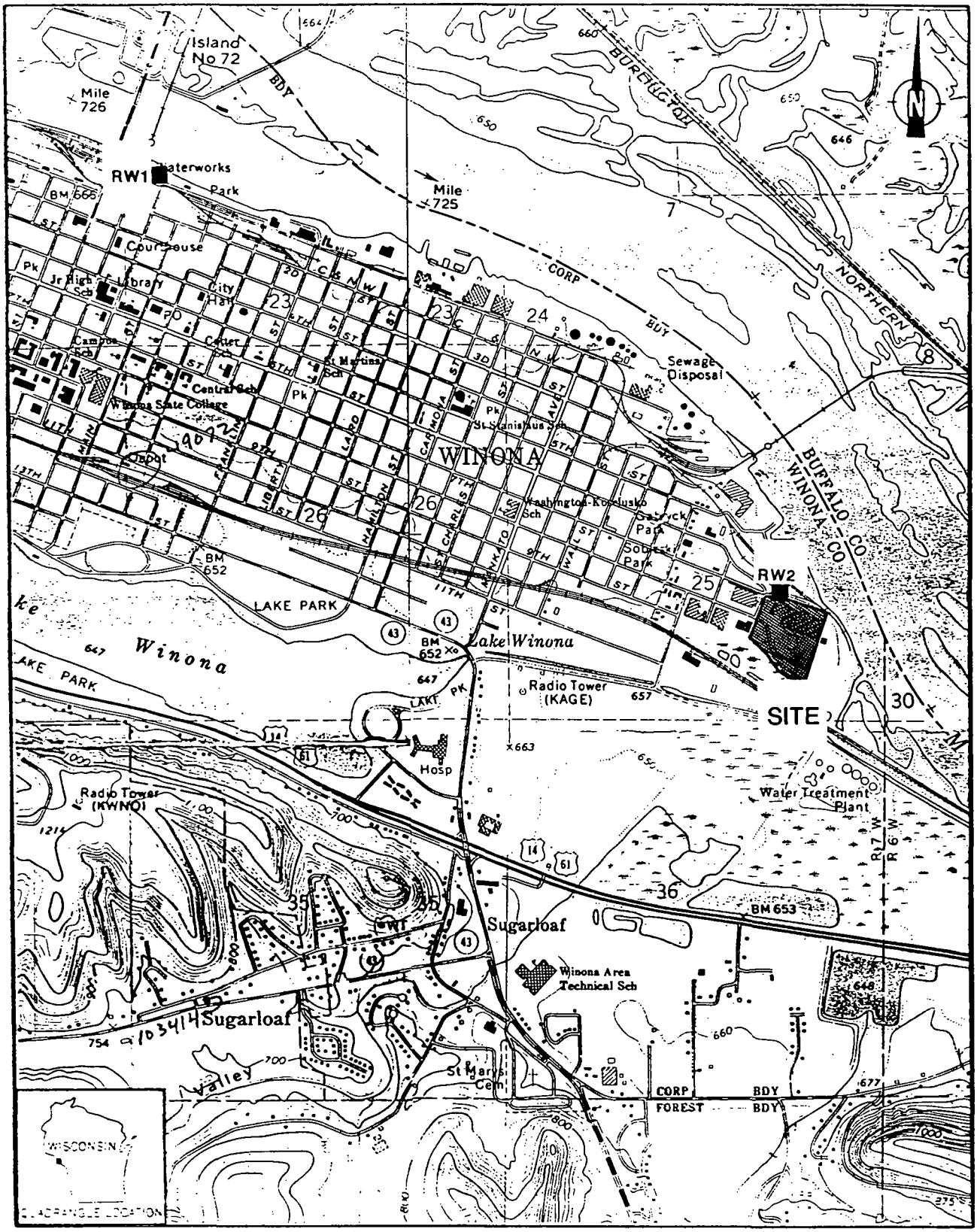
FIGURE 3-2 SOIL SAMPLING LOCATIONS

of 0 to 6 inches with a shovel. Sample S4 was collected to determine whether any spills had occurred in the loading dock area. Soil sample S5 was collected from the edge of the wooded area in the southwest portion of the site. This area appeared to be undisturbed. Sample S5 was collected at a depth of approximately 0 to 6 inches with a hand trowel. Although sample S5 was originally intended to be collected as a potential background sample, FIT later determined sample S3 to be more representative of the chemical content of the soil in the area of the site.

All soil samples were collected using either a shovel or a posthole digger to dig to the desired depth. A hand trowel was used to place the volatile organic analysis (VOA) portions of the soil samples into sample bottles. The remaining soil sample portions were placed in a stainless steel bowl and then transferred to sample bottles using a hand trowel.

Standard E & E decontamination procedures were adhered to during the collection of all soil samples. The procedures included the scrubbing of all equipment (e.g., trowels, bowls, shovels, and posthole digger) with a solution of detergent (Alconox) and distilled water, and triple-rinsing the equipment with distilled water before the collection of each sample (E & E 1987). All soil samples were packaged and shipped in accordance with U.S. EPA-required procedures. As directed by U.S. EPA, all soil samples were analyzed using the U.S. EPA Contract Laboratory Program (CLP).

Groundwater Sampling Procedures. Peerless Chain Company has an on-site production well that is used in its manufacturing operations. This well does not supply drinking water to the plant or offices. The plant and offices are served by the Winona municipal water system. FIT collected a sample from the on-site production well to determine whether TCL compounds and TAL analytes were present in groundwater in the vicinity of the site (see Figure 3-3 for groundwater sampling locations). The production well sample was designated W2. Groundwater sample W1 was collected from a Winona municipal well located approximately 2 miles northwest of the site. Groundwater sample W1 was collected to determine the common groundwater constituents of the area (see Table 3-1 for addresses of groundwater sampling locations).



SOURCE: USGS, Winona East, WI-MN Quadrangle, 7.5 Minute Series, 1972.

SCALE
0 0.5 1 MILE

FIGURE 3-3 GROUNDWATER SAMPLING LOCATIONS

Table 3-1

ADDRESSES AND DEPTHS OF GROUNDWATER
SAMPLING LOCATIONS

Sample	Well Depth (feet)	Address
W1	150	Winona Municipal Water Department #1 Johnson Street Winona, MN 55987
W2 (and Duplicate)	540	1416 E. Sanborn Street Winona, MN 55987

All groundwater samples were obtained from outlets that bypassed water treatment systems and storage tanks. Water was allowed to discharge before samples were collected to ensure that the sample sources had been purged of standing water (E & E 1987). In accordance with U.S. EPA quality assurance/quality control requirements, a duplicate groundwater sample and a field blank sample were collected on each day of sampling. The field blank sample was prepared from distilled water. The duplicate sample was collected at location W2.

As directed by U.S. EPA, all groundwater samples were analyzed using the U.S. EPA Central Regional Laboratory (CRL) of Chicago, Illinois.

4. ANALYTICAL RESULTS

This section presents results of the chemical analysis of FIT-collected soil and groundwater samples for TCL compounds and TAL analytes. All samples were analyzed for volatile organics, semivolatile organics, pesticides/polychlorinated biphenyls (PCBs), metals, and cyanides. Complete chemical analysis results of FIT-collected soil and groundwater samples are provided in Tables 4-1 and 4-2, respectively.

Quantitation/detection limits used in the analysis of soil and groundwater samples are provided in Appendix D.

The analytical data for the chemical analysis of soil and groundwater samples collected for this SSI have been reviewed by U.S. EPA for compliance with terms of CLP, and the review has been approved by U.S. EPA. The analytical data have also been reviewed by FIT for validity and usability. Any additions, deletions, or changes to the data have been incorporated in the chemical analysis results tables presented in this section.

Table 4-1

RESULTS OF CHEMICAL ANALYSIS OF

FIT-COLLECTED SOIL SAMPLES

Sample Collection Information and Parameters	Sample Number S1	S2	S3	S4	S5
Date	7/11/90	7/11/90	7/11/90	7/11/90	7/11/90
Time	1115	1130	1155	1210	1200
CLP Organic Traffic Report Number	ELD30	ELD31	ELD32	ELD33	ELD34
CLP Inorganic Traffic Report Number	MEGK30	MEGK31	MEGK32	MEGK33	MEGK34
Compound Detected (values in µg/kg)					
Semivolatile Organics					
phenanthrene	320J	--	--	--	480
anthracene	--	--	--	--	56J
fluoranthene	850	--	--	--	670
pyrene	610	--	--	--	510
benzo[a]anthracene	300J	--	--	--	260J
chrysene	500	--	--	--	320J
bis(2-ethylhexyl)phthalate	--	--	--	110J	--
benzo[b]fluoranthene	1,000	--	--	--	450
benzo[a]pyrene	480	--	--	--	260J
indeno[1,2,3-cd]pyrene	520	--	--	--	200J
benzo[g,h,i]perylene	440	--	--	--	190J
Pesticides/PCBs					
beta BHC	48	--	--	--	2.5J
4,4'-DDE	--	--	--	2.1J	8.9J
4,4'-DDT	8.2J	--	--	12J	3J

Table 4-1 (Cont.)

Sample Collection Information and Parameters	Sample Number S1	S2	S3	S4	S5
Analyte Detected (values in mg/kg)					
aluminum	1,920	3,550	2,640	4,260	7,190
arsenic	1BWJ	0.64BWJ	0.92BWJ	1.4BWJ	--
barium	25.8B	78.8	33.9B	39B	70.8
beryllium	--	0.43B	--	--	0.38B
calcium	1,280*J	5,550*J	7,380*J	21,400*J	7,490*J
chromium	5.2	7.6J	6.2	13.2	13.9
cobalt	4.1B	4.2B	2.8B	4.3B	6.2B
copper	4.4B	12	5.4	10	12.1
iron	5,870	14,200	5,600	8,550	15,000
lead	18.2	20.9	7	9.6	13.2
magnesium	1,220	1,020B	4,520	5,830	4,380
manganese	253N*J	429N*J	416N*J	313N*J	289N*J
mercury	--	0.18N	0.21N	0.21N	0.3N
nickel	--	11.8	--	10.1	15.5
vanadium	11.3	15.2	8.2B	15.7	23.1
zinc	31.5	172	34	72.6	70

-- Not detected.

Table 4-1 (Cont.)

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
N	Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
*	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be quantitative or semi-quantitative.
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.
W	Post-digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance.	Value may be semiquantitative.

Table 4-2

RESULTS OF CHEMICAL ANALYSIS OF
FIT-COLLECTED GROUNDWATER SAMPLES

Sample Collection Information and Parameters	Sample Number RW1	RW2	Duplicate	Blank
Date	7/11/90	7/11/90	7/11/90	7/11/90
Time	0900	1005	1005	1040
CRL Log Number	90FT20S53	90FT20S54	90FT20D54	90FT02R95
Temperature (°C)	12	12	12	19
Specific Conductivity (μmhos/cm)	700	1020	1020	70.5
pH	6.43	6.24	6.24	7.1
Compound Detected (values in μg/L)				
Volatile Organics				
1,2-dichloroethene (total)	0.6J	--	--	--
1,1,1-trichloroethane	--	--	--	0.6J
trichloroethene	2	--	--	--
tetrachloroethene	4	--	--	--
Analyte Detected (values in μg/L)				
barium	81.3	55.7	54.7	--
cadmium	0.2	0.2	0.2	0.2
calcium	60,600	64,600	64,600	--
copper	--	--	--	12.8
iron	1,530	499	495	--
magnesium	25,700	30,000	30,000	--
manganese	961	31.3	30.1	--
nickel	16.7	--	--	--
sodium	23,600	73,400	72,100	--

-- Not detected.

Table 4-2 (Cont.)

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

5. DISCUSSION OF MIGRATION PATHWAYS

5.1 INTRODUCTION

This section presents discussions of data and information pertaining to potential migration pathways and targets of TCL compounds and TAL analytes that are possibly attributable to the PCC site.

The five migration pathways of concern discussed are groundwater, surface water, air, fire and explosion, and direct contact.

5.2 GROUNDWATER

A release of TCL compounds or TAL analytes to area groundwater was not documented during the SSI of the PCC site. A potential for TCL compounds and TAL analytes detected on-site to migrate to groundwater in the area of the site exists based on the following information.

- TCL compounds and TAL analytes were detected in on-site soil samples.
- No liner is present at the PCC site.
- There is a possibility that wastes generated on-site may have been disposed of on-site.

The potential for migration is also based on the geology of the area of the site. According to area well logs and geological literature reviewed by FIT, the stratigraphy of the region of the site includes, in

ascending order, the Precambrian Granite-Gneiss, Mount Simon, and Eau Claire formations, and Pleistocene-age and recent sediments.

Because well logs of the area show no continuous confining layers between these four water-bearing formations, the entire geologic column is considered to be the aquifer of concern (AOC). All of these formations appear to be hydraulically connected. The basement rock, the Precambrian Granite-Gneiss, yields water locally from extensive faults and fractures. The Winona municipal water supply wells draw water from the Precambrian Granite-Gneiss Formation. The Mount Simon Sandstone Formation is a poorly cemented, well-sorted sandstone that is extensively used in the area of the site as a source of water. The Eau Claire Formation is a glauconitic sandstone and siltstone with interbedded shale. In southeast Minnesota, the Eau Claire Formation tends to be very sandy (Book and Mossler 1984; Kanivetsky 1984). The sandy zones of the Eau Claire Formation are also used as a source of drinking water.

The PCC site is underlain by glacial material composed of sand and clay, including glacial outwash terraces along the Mississippi River. The glacial material is covered by alluvial floodplain sediments. The local, shallow groundwater flow is assumed to be toward the Mississippi River. The direction of the deep, groundwater flow is not known. The depth to groundwater is believed to be approximately 42 feet in the area of the site.

The city of Winona is served by eight municipal wells. The municipal wells are located along the Mississippi River, approximately 1 3/4 miles northwest of the site. The wells draw water from the Precambrian Granite-Gneiss, Mount Simon Sandstone, and Eau Claire formations. Water from these units is blended prior to distribution. Five of the municipal wells are screened at approximate depths of 500 feet, and the remaining three wells are screened at approximate depths of 150 feet. Municipal water is distributed within the city of Winona and serves a population of approximately 25,075 persons (Troke 1989).

The population within a 3-mile radius of the site potentially affected by a release of TCL compounds or TAL analytes to groundwater is approximately 25,359. This population was calculated by first counting houses on United States Geological Survey (USGS) topographic maps that lie outside of the Winona municipal water distribution boundary but

within a 3-mile radius of the site (USGS 1958, 1972, 1972a), and multiplying this number by the persons-per-household average of 2.73 for Winona County (U.S. Bureau of the Census 1982). This total (284) was then added to the approximately 25,075 persons served by the Winona municipal water system.

5.3 SURFACE WATER

No surface water samples were collected during the SSI of the PCC site. A potential does exist for the migration of TCL compounds and TAL analytes detected on-site to the Mississippi River based on the following information.

- TCL compounds and TAL analytes were detected in on-site soil samples.
- Site drainage is toward the on-site wetland.
- The culvert that extends from the wetlands area drains into the Mississippi River.

The Mississippi River is used for recreational fishing and industrial purposes. Portions of the Mississippi River within a 3-mile radius of the site have been designated a wildlife and fish refuge area (Minnesota Tourism Division 1984).

5.4 AIR

A release of TCL compounds or TAL analytes to the air was not documented during the SSI of the PCC site. During the reconnaissance inspection, FIT site-entry instruments (HNu 101, oxygen meter, explosimeter, radiation monitor, and hydrogen cyanide detector) did not detect levels above background concentrations at the site. In accordance with the U.S. EPA-approved work plan, further air monitoring was not conducted by FIT.

A potential does not exist for TCL compounds and TAL analytes to migrate from the site via windblown particulates based on the fact that the site is heavily vegetated and landscaped.

5.5 FIRE AND EXPLOSION

According to federal, state, and local file information reviewed by FIT, and an interview with Etnier, no documentation exists of an incident of fire or explosion at the site. According to FIT observations and site-entry equipment readings, no potential for fire or explosion existed at the site at the time of the SSI. According to local fire officials, the PCC site has had no problems with fires in the past and poses no potential hazard (Krall 1990).

5.6 DIRECT CONTACT

According to federal, state, and local file information reviewed by FIT, observations made during the SSI, and the interview with the site representative, no incidents of direct contact with TCL compounds or TAL analytes at the PCC site have been documented.

There is, however, a potential for the public to come into contact with TCL compounds and TAL analytes detected at the site because the site is not fenced and access is not restricted. Furthermore, there are approximately 300 persons employed on-site by Peerless Chain Company.

The population within a 1-mile radius of the site potentially affected through direct contact with TCL compounds and TAL analytes at the site is 7,100 persons. This population was calculated by counting houses within a 1-mile radius of the site on a USGS topographic map (USGS 1972) and multiplying this number by a persons-per-household value of 2.72 for Winona County (U.S. Bureau of the Census 1982).

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6261:9

A

APPENDIX A

SITE 4-MILE RADIUS MAP

SDMS US EPA Region V

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APPENDIX B

U.S. EPA FORM 2070-13

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION
01 STATE: MN D | 02 SITE NUMBER: 00615.588

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Peerless Chain Company	1416 E Sanborn St				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Winona	MN	55987	Winona	169	01

09 COORDINATES: LATITUDE 44° 02 22.5 | LONGITUDE 091 39 15.5

10 TYPE OF OWNERSHIP (Check one)
■ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
7 / 11 / 90 (MONTH DAY YEAR)	■ ACTIVE ☐ INACTIVE	1969 (BEGINNING YEAR) Present (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ■ B. EPA CONTRACTOR Ecology + Environment (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Jeff Taylor	Biologist	E + E	(312) 663-9415
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
Phil Richard	Wildlife Biologist	E + E	(312) 663-9415
Stan Senger	Water Resource Manager	E + E	(312) 663-9415
Deneen Benford	Biologist	E + E	(312) 663-9415
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Richard J. Etnier	Plant Engineer of Peerless Chain Co	1416 E. Sanborn St	(507) 452-2376
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
■ PERMISSION ☐ WARRANT	800 am	Sunny Clear ~80°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Ron Swenson	Minnesota Pollution Control Agency	(612) 297-1795

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Jeff Taylor	US EPA / FIT	Ecology + Environment	(312) 663-9415	11 / 19 / 90 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN.D	CC615E5EE

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] A. SOLID
- [ ] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER (Specify)
- [ ] E. SLURRY
- [x] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS Unknown
CUBIC YARDS Unknown
NO. OF DRUMS Unknown

03 WASTE CHARACTERISTICS (Check all that apply)

- [x] A. TOXIC
- [x] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [x] D. PERSISTENT
- [x] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Unknown	Unknown	No documentation of any waste disposed of on-site. However waste characteristics were determined through analysis of on-site soil samples collected by FIT.
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	✓	✓	

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	See Table 4-1 in the narrative for complete analytical results of on-site soil samples collected by FIT on 7/11/90				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	Sulfuric Acid	7664-93-9	FDS		
FDS	Muriatic Acid	7647-01-0	FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

Analytical Data results (E+E 1990)
FIT File info.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS	I. IDENTIFICATION
EPA	01 STATE: MD 02 SITE NUMBER: [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~25,359 — 04 NARRATIVE DESCRIPTION

See Groundwater discussion in narrative (Section 5.2)

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~0 — 04 NARRATIVE DESCRIPTION

See Surface water discussion in narrative (Section 5.3)

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~0 — 04 NARRATIVE DESCRIPTION

See Air route discussion in narrative (Section 5.4)

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~0 — 04 NARRATIVE DESCRIPTION

See Fire/Explosion discussion in the narrative (Section 5.5)

01 ☒ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~7100 — 04 NARRATIVE DESCRIPTION

See direct contact discussion in the narrative (Section 5.6)

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: 7/11/90) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: Unknown (Acres) — 04 NARRATIVE DESCRIPTION

See Table 4-1 in the narrative
Also see section 2.3 site history

01 ☒ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~25,359 — 04 NARRATIVE DESCRIPTION

See Section 5.2

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ~300 — 04 NARRATIVE DESCRIPTION

See Section 5.6

01 ☒ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~25,359 — 04 NARRATIVE DESCRIPTION

The above population figure represents the approximate population that could be exposed via the groundwater route

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MND | 02 SITE NUMBER: 000155788

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
A potential exists because of TCL compound and TNL analytes detected in on site soil samples.

01 ☒ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names of species)
A potential exists for fishin the Mississippi River to be affected. The River makes up the northwest border.

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Since the Mississippi River is used for fishing a Potential exists

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 25359 — 04 NARRATIVE DESCRIPTION
Contaminants were detected in on-site Soil Samples

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None documented or observed

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☒ ALLEGED
04 NARRATIVE DESCRIPTION
See Section 2.3 in the narrative

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
None observed

III. TOTAL POPULATION POTENTIALLY AFFECTED: ~ 25359

IV. COMMENTS
The Peerless Chain Company site is located on the Southeast side of Winona, MN. IT is located directly adjacent to the Mississippi River.

V. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)
USES Topographic maps — S.S.I. conducted by FIT 1990
U.S. Bureau of Census
Analytical data (E.E. 1990)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	000598585

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☒ A. NPDES	Unknown	3/21/88	11/31/93	For wastewater treatment system
☐ B. UIC				City Sewer System
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☒ D. TANK, ABOVE GROUND	(2) 5000	gallons
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A. INCINERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER
- ☒ A. BUILDINGS ON SITE
  1

06 AREA OF SITE
38 (Acres)

07 COMMENTS Pickel liquor waste is stored in the Plant then transported to Treatment Plant in Pine Island MN. No wastes permanently stored on site.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)
☐ A. ADEQUATE, SECURE ☒ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.
Above-ground holding tanks appeared to be sound. Empty drums that were present seemed to pose no problem.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS Contamination found in on-site soil samples

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

SSI conducted by FIT 1990.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	00158558

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☒

02 STATUS

	ENDANGERED	AFFECTED	MONITORED
COMMUNITY	A. ☐	B. ☐	C. ☒
NON-COMMUNITY (Unknown)	D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 2 (mi)
B. 1 1/2 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING
☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER ~25,359

03 DISTANCE TO NEAREST DRINKING WATER WELL 1 1/2 (mi)

04 DEPTH TO GROUNDWATER ~42 (ft)

05 DIRECTION OF GROUNDWATER FLOW E - SE

06 DEPTH TO AQUIFER OF CONCERN ~42 (ft)

07 POTENTIAL YIELD OF AQUIFER Unknown (gpd)

08 SOLE SOURCE AQUIFER ☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

The city of Winona has eight wells. The closest to the site is approximately 1 3/4 miles northwest of the site. The closest private wells are located approximately 1 1/2 miles to the south east. There is a production well on-site and there are other industrial wells in the area.

10 RECHARGE AREA
☒ YES ☐ NO
COMMENTS Possible recharge from the infiltration of Precipitation

11 DISCHARGE AREA
☒ YES ☐ NO
COMMENTS Possible discharge into the Mississippi River

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE
☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
☐ C. COMMERCIAL, INDUSTRIAL
☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Mississippi River	☐	directly adjacent (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. ~7100 NO. OF PERSONS	B. ~12000 NO. OF PERSONS	C. ~19000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION on-site (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ~4000

04 DISTANCE TO NEAREST OFF-SITE BUILDING ~200 ft (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The site is located on the Southeast side of the city of Winona. Most of the city is located within 4 miles of the site

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: MND | 02 SITE NUMBER: 006158588

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☒ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK: 45 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE: Unknown (ft)

05 SOIL pH: Unknown

06 NET PRECIPITATION: 31" - 31" = 0 (in)

07 ONE YEAR 24 HOUR RAINFALL: 2.5 (in)

08 SLOPE — SITE SLOPE: 0-3 % — DIRECTION OF SITE SLOPE: SE — TERRAIN AVERAGE SLOPE: 0 %

09 FLOOD POTENTIAL: SITE IS IN 500 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE A. N/A (mi) — OTHER B. On-Site (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species): 7 1 (mi)

ENDANGERED SPECIES: N/A

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AG LAND
A. On-Site (mi)	B. ~ 1000 ft (mi)	C. N/A (mi)	D. ~3 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is located in the Mississippi River valley. Large Bluffs are located on each side of the valley with elevations up to 600 feet above the river. (See Appendix A)

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

E+E FIT files
USGS Topographic maps
Local well logs

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006158588

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	2	CRL Chicago - TCL CRL Chicago - TAL	on file
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	5	NET Mid Atlantic INC Thorofare, NJ. - TCL Compuchem Labs RTP, NC - TAL	on file
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Hnu 101	No readings above background
Oxygen meter	21% O_2 0% LEL
Explosimeter	No readings above background
Radiation monitor	No readings above background
Hydrocarbon Gastec detector	No readings above background.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF Ecology + Environment Chicago
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Ecology + Environment Chicago

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

pH
conductivity
Temperature
} of FIT collected well samples See table 4-2

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SSI conducted 7/11/90

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006154878

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
* Peerless Chain Company		1416 East Sanborn		Winona	MN	55987
* Corporate Property Association		489 5th Av		New York	NY	10022
N/A						
N/A						
N/A						

PARENT COMPANY (if applicable)

06 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE
Bridgewater Resources Corp		9701 Wilshire Blvd		Beverly Hill	CA	90212
N/A						
N/A						
N/A						

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
N/A						
N/A						
N/A						
N/A						

IV. REALTY OWNER(S) (if applicable, list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
N/A						
N/A						
N/A						

V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

* Peerless Chain owns the building and leases the property from Corporate Property Association.

SSI conducted 7/11/90

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006158588

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
Peerless Chain Company	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
1416 E. Sanborn	

05 CITY	06 STATE	07 ZIP CODE
Winona	MN	

08 YEARS OF OPERATION	09 NAME OF OWNER
Since 1969	Peerless Chain Co.

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
Bridgewater Resources Corp.	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
9701 Wilshire Blvd	

14 CITY	15 STATE	16 ZIP CODE
Beverly Hills	CA	90212

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SSI conducted 7/11/90

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006158588

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Dallen Transport		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
1680 4th Av			
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
Newport	MN		
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SSI conducted 7/11/96

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NND	000157858

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	006158580

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT File info
SSI conducted by FIT

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	006158588

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

N/A

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT File info

SSI conducted by FIT

C

APPENDIX C

FIT SITE PHOTOGRAPHS

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 1 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN02375B

DATE: > 7/11/90

TIME: > 1115

DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > S1

DESCRIPTION: > S1 Close up collected south of on-site road

>

DATE: > 7/11/90

TIME: > 1115

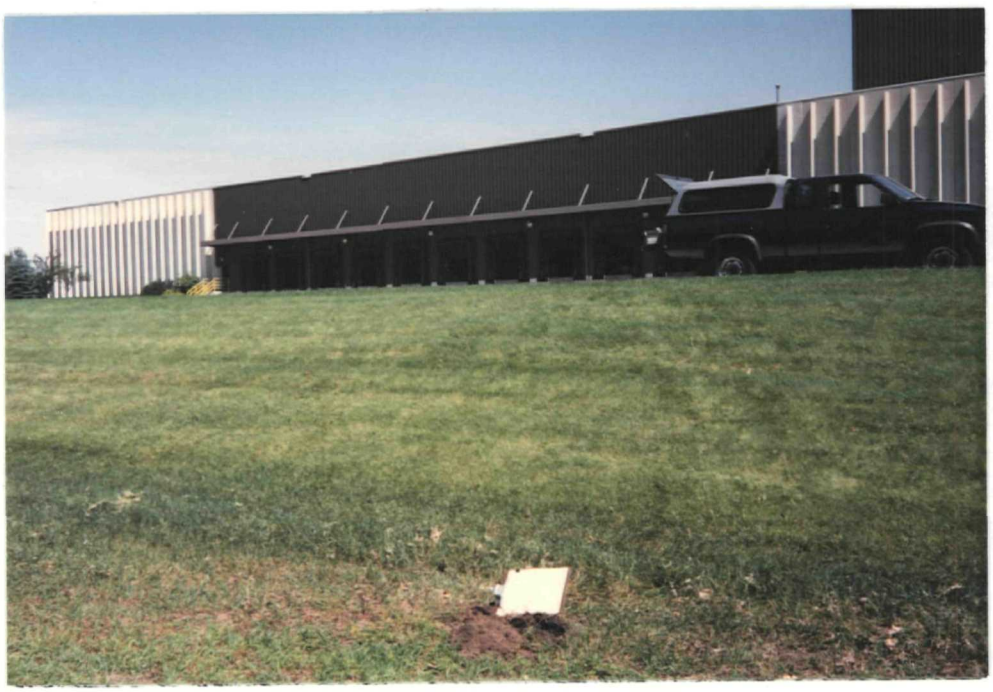
DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > S1



DESCRIPTION: > S1 perspective showing south side of

> building in the background.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 2 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN0237SB

DATE: > 7/11/90

TIME: > 1130

DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear > ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > S2

DESCRIPTION: > S2 close up collected from area of overgrown > vegetation located southeast of Building

DATE: > 7/11/90

TIME: > 1130

DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear > ~80°F

PHOTOGRAPHED BY: > J Taylor

SAMPLE ID (if applicable): > S2

DESCRIPTION: > S2 perspective collected South east of building >

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 3 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN02375B

DATE: > 7/11/90

TIME: > 1155

DIRECTION OF PHOTOGRAPH: > Northeast

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > S3

DESCRIPTION: > S3 Close up collected from gravel area north of the building

DATE: > 7/11/90

TIME: > 1155

DIRECTION OF PHOTOGRAPH: > North east

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J Taylor

SAMPLE ID (if applicable): > S3

DESCRIPTION: > Perspective S3 with storage tanks in the background

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 4 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN0237SB

DATE: > 7/11/90

TIME: > 1210

DIRECTION OF PHOTOGRAPH: > ~~So~~ East

WEATHER CONDITIONS: > Sunny, clear

> ~ 80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > S4

DESCRIPTION: > S4 Close up collected from the ~~west~~ side of the

> building

DATE: > 7/11/90

TIME: > 1210

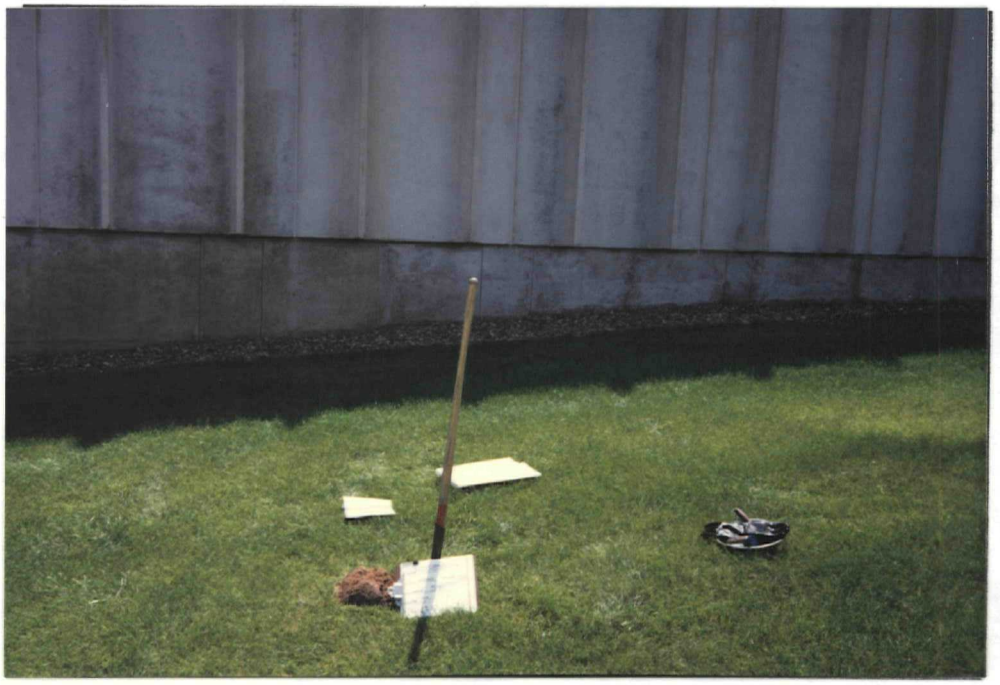
DIRECTION OF PHOTOGRAPH: > East

WEATHER CONDITIONS: > Sunny, clear

> ~ 80°F

PHOTOGRAPHED BY: > J Taylor

SAMPLE ID (if applicable): > S4



DESCRIPTION: > S4 Perspective along the west side of the

> building

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 5 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN02375B

DATE: >7/11/90

TIME: >1200

DIRECTION OF PHOTOGRAPH: >South

WEATHER CONDITIONS: >Sunny, clear >~80°F

PHOTOGRAPHED BY: >J. Taylor

SAMPLE ID (if applicable): > S5

DESCRIPTION: > S5 close up (Potential Background Sample) Collected > from wooded area south of building.

DATE: >7/11/90

TIME: >1200

DIRECTION OF PHOTOGRAPH: >South

WEATHER CONDITIONS: >Sunny, clear >~80°F

PHOTOGRAPHED BY: >J Taylor

SAMPLE ID (if applicable): > S5

DESCRIPTION: > S5 Perspective (Potential Background Sample) > collected from wooded area

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 6 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN02375B

DATE: > 7/11/90

TIME: > 1300

DIRECTION OF PHOTOGRAPH: > South

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > From Road Looking toward S2. This is the area of

> overgrown vegetation. Wetlands beyond trees.

DATE: > 7/11/90

TIME: > 1305

DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > East side of Building

>

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 7 OF 9

U.S. EPA ID: MND006158588 TDD: F05-E910-019 PAN: FMN02375B

DATE: > 7/11/90

TIME: > 1310

DIRECTION OF PHOTOGRAPH: > West

WEATHER CONDITIONS: > Sunny, clear

> ~ 80°F

PHOTOGRAPHED BY: > J. Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > North side of Building at Loading Dock.

>

DATE: > 7/11/90

TIME: > 1315

DIRECTION OF PHOTOGRAPH: > WEST

WEATHER CONDITIONS: > Sunny, clear

> ~ 80°F

PHOTOGRAPHED BY: > J Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > Empty drums stored along North side of

> building

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 8 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN0237SB

DATE: >7/11/90

TIME: >1315

DIRECTION OF PHOTOGRAPH: >South

WEATHER CONDITIONS: >Sunny, clear

>~80°F

PHOTOGRAPHED BY: >J. Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > Storage Tanks on Northside of building

>

DATE: >7/11/90

TIME: >1315

DIRECTION OF PHOTOGRAPH: >South

WEATHER CONDITIONS: >Sunny, Clear

>~80°F

PHOTOGRAPHED BY: >J Taylor

SAMPLE ID (if applicable): > N/A

DESCRIPTION: > Storage Tanks on the Northside of building

>

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Peerless Chain Co. PAGE 9 OF 9

U.S. EPA ID: MND006158588 TDD: F05-8910-019 PAN: FMN02375B

DATE: > 7/11/90

TIME: > 900

DIRECTION OF PHOTOGRAPH: > East

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > ~~J. Taylor~~ Richard

SAMPLE ID (if applicable): > RW 1

DESCRIPTION: > Winona Municipal well (RW1)

>

DATE: > 7/11/90

TIME: > 1005

DIRECTION OF PHOTOGRAPH: > North

WEATHER CONDITIONS: > Sunny, clear

> ~80°F

PHOTOGRAPHED BY: > J Taylor

SAMPLE ID (if applicable): > RW2

DESCRIPTION: > RW2 Peerless Production well

>

D

APPENDIX D

U.S. EPA TARGET COMPOUND LIST AND TARGET ANALYTE LIST QUANTITATION/DETECTION LIMITS

ADDENDUM A

ROUTINE ANALYTICAL SERVICES
CONTRACT REQUIRED DETECTION AND QUANTITATION LIMITS

Contract Laboratory Program
Target Compound List
Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Chloromethane	74-87-3	10 ug/L	10 ug/Kg
Bromomethane	74-83-9	10	10
Vinyl chloride	75-01-4	10	10
Chloroethane	75-00-3	10	10
Methylene chloride	75-09-2	5	5
Acetone	67-64-1	10	5
Carbon disulfide	75-15-0	5	5
1,1-dichloroethene	75-35-4	5	5
1,1-dichloroethane	75-34-3	5	5
1,2-dichloroethene (total)	540-59-0	5	5
Chloroform	67-66-3	5	5
1,2-dichloroethane	107-06-2	5	5
2-butanone (MEK)	78-93-3	10	10
1,1,1-trichloroethane	71-55-6	5	5
Carbon tetrachloride	56-23-5	5	5
Vinyl acetate	108-05-4	10	10
Bromodichloromethane	75-27-4	5	5
1,2-dichloropropane	78-87-5	5	5
cis-1,3-dichloropropene	10061-01-5	5	5
Trichloroethene	79-01-6	5	5
Dibromochloromethane	124-48-1	5	5
1,1,2-trichloroethane	79-00-5	5	5
Benzene	71-43-2	5	5
Trans-1,3-dichloropropene	10061-02-6	5	5
Bromoform	75-25-2	5	5
4-Methyl-2-pentanone	108-10-1	10	10
2-Hexanone	591-78-6	10	10
Tetrachloroethene	127-18-4	5	5
Tolene	108-88-3	5	5
1,1,2,2-tetrachloroethane	79-34-5	5	5
Chlorobenzene	108-90-7	5	5
Ethyl benzene	100-41-4	5	5
Styrene	100-42-5	5	5
Xylenes (total)	1330-20-7	5	5

Table A
Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Phenol	108-95-2	10 ug/L	330 ug/Kg
bis(2-Chloroethyl) ether	111-44-4	10	330
2-Chlorophenol	95-57-8	10	330
1,3-Dichlorobenzene	541-73-1	10	330
1,4-Dichlorobenzene	106-46-7	10	330
Benzyl Alcohol	100-51-6	10	330
1,2-Dichlorobenzene	95-50-1	10	330
2-Methylphenol	95-48-7	10	330
bis(2-Chloroisopropyl) ether	108-60-1	10	330
4-Methylphenol	106-44-5	10	330
N-Nitroso-di-n-dipropylamine	621-64-7	10	330
Hexachloroethane	67-72-1	10	330
Nitrobenzene	98-95-3	10	330
Isophorone	78-59-1	10	330
2-Nitrophenol	88-75-5	10	330
2,4-Dimethylphenol	105-67-9	10	330
Benzoic Acid	65-85-0	50	1600
bis(2-Chloroethoxy) methane	111-91-1	10	330
2,4-Dichlorophenol	120-83-2	10	330
1,2,4-Trichlorobenzene	120-82-1	10	330
Naphthalene	91-20-3	10	330
4-Chloroaniline	106-47-8	10	330
Hexachlorobutadiene	87-68-3	10	300
4-Chloro-3-methylphenol	59-50-7	10	330
2-Methylnaphthalene	91-57-6	10	330
Hexachlorocyclopentadiene	77-47-4	10	330
2,4,6-Trichlorophenol	88-06-2	10	330
2,4,5-Trichlorophenol	95-95-4	50	1600
2-Chloronaphthalene	91-58-7	10	330
2-Nitroaniline	88-74-4	50	1600
Dimethylphthalate	131-11-3	10	330
Acenaphthylene	208-96-8	10	330
2,6-Dinitrotoluene	606-20-2	10	330
3-Nitroaniline	99-09-2	50	1600
Acenaphthene	83-32-9	10	330
2,4-Dinitrophenol	51-28-5	50	1600
4-Nitrophenol	100-02-7	50	1600
Dibenzofuran	132-64-9	10	330
2,4-Dinitrotoluene	121-14-2	10	330
Diethylphthalate	84-66-2	10	330
4-Chlorophenyl-phenyl ether	7005-72-3	10	330

Table A
Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SLUDGE SEDIMENT
Fluorene	86-73-7	10 ug/L	330 ug/Kg
4-Nitroaniline	100-01-6	50	1600
4,6-Dinitro-2-methylphenol	534-52-1	50	1600
N-nitrosodiphenylamine	86-30-6	10	330
4-Bromophenyl-phenylether	101-55-3	10	330
Hexachlorobenzene	118-74-1	10	330
Pentachlorophenol	87-86-5	50	1600
Phenanthrene	85-01-8	10	330
Anthracene	120-12-7	10	330
Di-n-butylphthalate	84-74-2	10	330
Fluoranthene	206-44-0	10	330
Pyrene	129-00-0	10	330
Butylbenzylphthalate	85-68-7	10	330
3,3'-Dichlorobenzidine	91-94-1	20	660
Benzo(a)anthracene	56-55-3	10	330
Chrysene	218-01-9	10	330
bis(2-Ethylhexyl)phthalate	117-81-7	10	330
Di-n-octylphthalate	117-84-0	10	330
Benzo(b)fluoranthene	205-99-2	10	330
Benzo(k)fluoranthene	207-08-9	10	330
Benzo(a)pyrene	50-32-8	10	330
Indeno(1,2,3-cd)pyrene	193-39-5	10	330
Dibenz(a,h)anthracene	53-70-3	10	330
Benzo(g,h,i)perylene	191-24-2	10	330

Table A
Contract Laboratory Program
Target Compound List
Pesticide and PCB Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
alpha-BHC	319-84-6	0.05 ug/L	8 ug/Kg
beta-BHC	319-85-7	0.05	8
delta-BHC	319-86-8	0.05	8
gamma-BHC (Lindane)	58-89-9	0.05	8
Heptachlor	76-44-8	0.05	8
Aldrin	309-00-2	0.05	8
Heptachlor epoxide	1024-57-3	0.05	8
Endosulfan I	959-98-8	0.05	8
Dieldrin	60-57-1	0.10	16
4,4'-DDE	72-55-9	0.10	16
Endrin	72-20-8	0.10	16
Endosulfan II	33213-65-9	0.10	16
4,4'-DDD	72-54-8	0.10	16
Endosulfan sulfate	1031-07-8	0.10	16
4,4'-DDT	50-29-3	0.10	16
Methoxychlor (Mariate)	72-43-5	0.5	80
Endrin ketone	53494-70-5	0.10	16
alpha-Chlordane	5103-71-9	0.5	80
gamma-chlordane	5103-74-2	0.5	80
Toxaphene	8001-35-2	1.0	160
AROCLOR-1016	12674-11-2	0.5	80
AROCLOR-1221	11104-28-2	0.5	80
AROCLOR-1232	11141-16-5	0.5	80
AROCLOR-1242	53469-21-9	0.5	80
AROCLOR-1248	12672-29-6	0.5	80
AROCLOR-1254	11097-69-1	1.0	160
AROCLOR-1260	11096-82-5	1.0	160

Table A (Cont.)

CONTRACT LABORATORY PROGRAM

TARGET ANALYTE LIST (TAL)

INORGANIC DETECTION LIMITS

Compound	Procedure	Detection Limits Water (µg/L)	Detection Limits Soil Sediment Sludge (mg/kg)
aluminum	ICP	200	40
antimony	furnace	60	2.4
arsenic	furnace	10	2
barium	ICP	200	40
beryllium	ICP	5	1
cadmium	ICP	5	1
calcium	ICP	5,000	1,000
chromium	ICP	10	2
cobalt	ICP	50	10
copper	ICP	25	5
iron	ICP	100	20
lead	furnace	5	1
magnesium	ICP	5,000	1,000
manganese	ICP	15	3
mercury	cold vapor	0.2	0.008
nickel	ICP	40	8
potassium	ICP	5,000	1,000
selenium	furnace	5	1
silver	ICP	10	2
sodium	ICP	5,000	1,000
thallium	furnace	10	2
tin	ICP	40	8
vanadium	ICP	50	10
zinc	ICP	20	4
cyanide	color	10	2

3767:1

ADDENDUM B

CENTRAL REGIONAL LABORATORY DETECTION LIMITS

TABLE B
CENTRAL REGIONAL LABORATORY
VOLATILE DETECTION LIMITS

PARAMETER	CAS #	DETECTION LIMIt IN REAGENT WATER
Benzene	71-43-2	1.5 ug/L
Bromodichloromethane	75-27-4	1.5
Bromoform	75-25-2	1.5
Bromomethane	74-83-9	10
Carbon tetrachloride	56-23-5	1.5
Chlorobenzene	108-90-7	1.5
Chloroethane	75-00-3	1.5
2-Chloroethyl vinyl ether	110-75-8	1.5
Chloroform	67-66-3	1.5
Chloromethane	74-87-3	10
Dibromochloromethane	124-48-1	1.5
1,1-dichloroethane	75-34-3	1.5
1,2-dichloroethane	107-06-2	1.5
1,1-dichloroethene	75-35-4	1.5
Total-1,2-dichloroethene	540-59-0	1.5
1,2-dichloropropane	78-87-5	1.5
cis-1,3-dichlopropropene	10061-01-5	2
trans-1,3-dichloropropene	10061-02-6	1
Ethyl benzene	100-41-4	1.5
Methylene chloride*	75-09-2	1
1,1,2,2-tetrachloroethane	79-34-5	1.5
Tetrachloroethene	127-18-4	1.5
Toluene*	108-88-3	1.5
1,1,1-trichloroethane	71-55-6	1.5
1,1,2-trichloroethane	79-00-5	1.5
Trichloroethene	79-01-6	1.5
Vinyl chloride	75-01-4	10
Acrolein	107-02-8	100
Acetone*	67-64-1	75
Acrylonitrile	107-13-1	50
Carbon disulfide	75-15-0	3
2-butanone	78-93-3	(50)
Vinyl acetate	108-05-4	15
4-Methyl-2-Pentanone	108-10-1	(3)
2-Hexanone	519-78-6	(50)
Styrene	100-42-5	1
m-xylene	108-38-3	2
o-xylene**	95-47-6	
p-xylene**	106-42-3	2.5**
Total Xylene	1330-02-7	

* Common Laboratory Solvents.
Blank Limit is 5X Method Detection Limit.
( ) Values in parentheses are estimates.
Actual values are being determined at this time.
** The o-xylene and p-xylene are reported as a total of the two.

TABLE B (cont.)
CRL
SEMIVOLATILE DETECTION LIMITS

PARAMETER	CAS #	DETECTION LIMIT	BLANK LIMIT
Aniline	62-53-3	1.5 ug/L	3 ug/L
Bis(2-chloroethyl)ether	111-44-4	1.5	3
Phenol	108-95-2	2	4
2-Chlorophenol	95-57-8	2	4
1,3-Dichlorobenzene	541-73-1	2	4
1,4-Dichlorobenzene	106-46-7	2	4
1,2-Dichlorobenzene	95-50-1	2.5	5
Benzyl alcohol	100-51-6	2	4
Bis(2-chloroisopropyl) ether	39638-32-9	2.5	5
2-Methylphenol	95-48-7	1	2
Hexachloroethane	67-72-1	2	4
N-nitrosodipropylamine	621-64-7	1.5	3
Nitrobenzene	98-95-3	2.5	5
4-Methylphenol	106-44-5	1	2
Isophorone	78-59-1	2.5	5
2-Nitrophenol	88-75-5	2	4
2,4-Dimethylphenol	105-67-9	2	4
Bis(2-chloroethoxy)methane	111-91-1	2.5	5
2,4-Dichlorophenol	120-83-2	2	4
1,2,4-Trichlorobenzene	120-82-1	2	4
Naphthalene	91-20-3	2	4
4-Chloroaniline	106-47-8	2	4
Hexachlorobutadiene	87-68-3	2.5	5
Benzoic acid	65-85-0	(30)	(60)
2-Methylnapthalene	91-57-6	2	4
4-Chloro-3-methylphenol	59-50-7	1.5	3
Hexachlorocyclopentadiene	77-47-4	2	4
2,4,6-Trichlorophenol	88-06-2	1.5	3
2,4,5-Trichlorophenol	95-95-4	1.5	3
2-Chloronapthalene	91-58-7	1.5	3
Acenapthylene	208-96-8	1.5	3
Dimethyl phthalate	131-11-3	1.5	3
2,6-Dinitrotoluene	606-20-2	1	2
Acenaphthene	83-32-9	1.5	3
3-Nitroaniline	99-09-2	2.5	5
Dibenzofuran	132-64-9	1	2
2,4-Dinitrophenol	51-28-5	(15)	(30)
2,4-Dinitrotoluene	121-14-2	1	2

cont.

TABLE B (Cont.)
CRL
SEMIVOLATILE DETECTION LIMITS

PARAMETER	CAS #	DETECTION LIMIT	BLANK (a) LIMIT
Fluorene	86-73-7	1 ug/L	2 ug/L
4-Nitrophenol	100-02-7	1.5	3
4-Chlorophenyl phenyl ether	7005-72-3	1	2
Diethylphthalate	84-66-2	1	2
4,6-dinitro-2-methylphenol	534-52-1	(15)	(30)
1,2-Diphenylhydrazine	122-66-7	1	2
n-Nitrosodiphenylamine *	86-30-6		
Diphenylamine *	122-39-4	1.5	3
4-Nitroaniline	100-01-6	3	6
4-Bromophenyl-phenylether	101-55-3	1.5	3
Hexachlorobenzene	118-74-1	1.5	3
Pentachlorophenol	87-86-5	2	4
Phenanthrene	85-01-8	1	2
Anthracene	120-12-7	2.5	5
Di-n-butylphthalate	84-74-2	2	4
Fluoranthene	206-44-0	1.5	3
Pyrene	129-00-0	1.5	3
Butylbenzylphthalate	85-68-7	3.5	7
Chrysene **	218-01-9		
Benzo(a)anthracene **	56-55-3	1.5	3
bis(2-Ethylhexyl)phthalate	117-81-7	1	2
Di-n-octyl phthalate	117-84-0	1.5	3
Benzo(b)fluoranthene ***	205-99-2		
Benzo(k)fluoranthene ***	207-08-9	1.5	3
Benzo(a)pyrene	50-32-8	2	4
Indeno(1,2,3-cd)pyrene	193-39-5	3.5	7
Dibenzo(a,h)anthracene	53-70-3	2.5	5
Benzo(g,h,i)perylene	191-24-2	4	8
2-Nitroaniline	88-74-4	1	2

* These two parameters are reported as a total.
** These two parameters are reported as a total.
*** These two parameters are reported as a total.
(a) If the blank limit is exceeded, the sample is reextracted and rerun.
( ) Values in parentheses are estimates.
The actual values are being determined at this time.

Note: Limits are for reagent water.

TABLE B (Cont.)
CRL
PESTICIDE AND PCB DETECTION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Aldrin	309-00-2	0.005 ug/L
alpha BHC	319-84-6	(0.010)
beta BHC	319-85-7	(0.005)
delta BHC	319-86-8	(0.005)
gama BHC (Lindane)	58-89-9	0.005
Chlordane	57-74-8	(0.020)
4,4'-DDD	72-54-8	(0.020)
4,4'-DDE	72-55-9	(0.005)
4,4'-DDT	50-29-3	0.020
Dieldrin	60-57-1	0.010
Endosulfan I	959-98-8	0.010
Endosulfan II	33213-65-9	0.010
Endosulfan sulfate	1031-07-8	(0.10)
Endrin	72-20-8	0.010
Endrin aldehyde	7421-93-4	(0.030)
Endrin ketone	53494-70-5	(0.030)
Heptachlor	76-44-8	0.030
Heptachlor epoxide	1024-57-3	0.005
4,4'-Methoxychlor	72-43-5	0.020
Toxaphene	8001-35-2	(0.25)
PCB-1242	53469-21-9	(0.10)
PCB-1248	12672-29-6	(0.10)
PCB-1254	11097-69-1	(0.10)
PCB-1260	11096-82-5	(0.10)

( ) Values in parentheses are estimates.
Actual values are being determined at this time.

Note: Limits are for reagent water.

TABLE B (Cont.)
CRL
INORGANIC DETECTION LIMITS

COMPOUND	PROCEDURE	DETECTION LIMITS	RANGE	UNITS
Aluminum	ICP	100	80 to 1,000,000	ug/L
Antimony	Furnace	2	2 to 30	ug/L
Arsenic	Furnace	2	2 to 30	ug/L
Barium	ICP	50	6 to 20,000	ug/L
Beryllium	ICP	5	1 to 20,000	ug/L
Boron	ICP	80	80 to 20,000	ug/L
Cadmium	ICP	10	10 to 20,000	ug/L
Cadmium	Furnace	0.2	0.2 to 2	ug/L
calcium	ICP	1000	0.5 to 1,000	mg/L
Chromium	ICP	10	8 to 20,000	ug/L
Cobalt	ICP	10	6 to 20,000	ug/L
Copper	ICP	10	6 to 20,000	ug/L
iron	ICP	100	80 to 1,000,000	ug/L
Lead	Furnace	2	2 to 30	ug/L
Lead	ICP	70	70 to 20,000	ug/L
Lithium	ICP	10	10 to 20,000	ug/L
Magnesium	ICP	1000	0.1 to 200	mg/L
Maganese	ICP	10	5 to 20,000	ug/L
Mercury	Cold vapor	0.2	0.1 to 2	ug/L
Molybdenum	ICP	15	15 to 20,000	ug/L
Nickel	ICP	20	15 to 20,000	ug/L
Potassium	ICP	2000	5 to 1,000	mg/L
Selenium	Furnace	2	2 to 30	ug/L
Silver	ICP	5	6 to 10,000	ug/L
Sodium	ICP	1000	1 to 1,000	mg/L
Strontium	ICP	10	10 to 20,000	ug/L
Sulfide	Titration	1	< 1	mg/L
Sulfide	Color	0.05	< 1	mg/L
Thallium	Furnace	2	2 to 30	ug/L
Titanium	ICP	25	25 TO 20,000	UG/L
Tin	ICP	40	40 to 20,000	ug/L
Vanadium	ICP	10	5 to 20,000	ug/L
Yttrium	ICP	5	5 to 20,000	ug/L
Zinc	ICP	20	40 to 1,000,000	ug/L
Cyanide	AA	5.0	8 to 200	ug/L

Note: The above list may or may not contain compounds that are routinely analyzed at CRL for lov level detection limits for drinking vater.

See inorganic Routine Analytical Services for related CAS #.

ADDENDUM C

SPECIAL ANALYTICAL SERVICES
DETECTION LIMITS

Drinking Water Samples

TABLE C
SPECIAL ANALYTICAL SERVICES DRINKING WATER
VOLATILE QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT IN REAGENT WATER
Benzene	71-43-2	1.5 ug/L
Bromodichloromethane	75-27-4	1.5
Bromoform	75-25-2	1.5
Bromomethane	74-83-9	1.5
Carbon tetrachloride	56-23-5	1.5
Chlorobenzene	108-90-7	1.5
Chloroethane	75-00-3	1.5
2-Chloroethyl vinyl ether	110-75-8	1.5
Chloroform	67-66-3	1.5
Chloromethane	74-87-3	1.5
Dibromochloromethane	124-48-1	1.5
1,1-Dichloroethane	75-34-3	1.5
1,2-Dichloroethane	107-06-2	1.5
1,1-Dichloroethene	75-35-4	1.5
Total-1,2-Dichloroethene	540-59-0	1.5
1,2-Dichloropropane	78-87-5	1.5
cis-1,3-Dichloropropene	10061-01-5	2
trans-1,3-Dichlopropropene	10061-02-6	1
Ethyl benzene	100-41-4	1.5
Methylene chloride *	75-09-2	1
1,1,2,2-Tetrachloroethane	79-34-5	1.5
Tetrachloroethene	127-18-4	1.5
Toluene *	108-88-3	1.5
1,1,1-Trichloroethane	71-55-6	1.5
1,1,2-Trichloroethane	79-00-5	1.5
Trichloroethene	79-01-6	1.5
Vinyl chloride	75-01-4	1.5
Acrolein	107-02-8	25
Acetone *	67-64-1	5
Acrylonitrile	107-13-1	25
Carbon disulfide	75-15-0	3
2-Butanone	78-93-3	5
Vinyl acetate	108-05-4	5
4-Methyl-2-pentanone	108-10-1	1.5
2-Hexanone	519-78-6	5
Styrene	100-42-5	1
Xylene (total)	1330-02-7	1.5

* Common laboratory solvents.
Blank limit is 5x method detection limit.
( ) Values in parentheses are estimates.
actual values are being determined at this time.

TABLE C (cont.)
SAS DRINKING WATER
SEMIVOLATILES QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Aniline	62-53-3	1.5 ug/l
Bis(2-chloroethyl)ether	111-44-4	1.5
Phenol	108-95-2	2
2-Chlorophenol	95-57-8	2
1,3-Dichlorobenzene	541-73-1	2
1,4-Dichlorobenzene	106-46-7	2
1,2-Dichlorobenzene	95-50-1	2.5
Benzyl alcohol	100-51-6	2
Bis(2-chloroisopropyl)ether	39638-32-9	2.5
2-Methylphenol	95-48-7	1
Hexachloroethane	67-72-1	2
n-Nitrosodipropylamine	621-64-7	1.5
Nitrobenzene	98-95-3	2.5
4-Methylphenol	106-44-5	1
Isophorone	78-59-1	2.5
2-Nitrophenol	88-75-5	2
2,4-Dimethylphenol	105-67-9	2
Bis(2-Chloroethoxy)methane	111-91-1	2.5
2,4-Dichlorophenol	120-83-2	2
1,2,4-Trichlorobenzene	120-82-1	2
Naphthalene	91-20-3	2
4-Chloroaniline	106-47-8	2
Hexachlorobutadiene	87-68-3	2.5
Benzoic Acid	65-85-0	20
2-Methylnapthalene	91-57-6	2
4-Chloro-3-methylphenol	59-50-7	1.5
Hexachlorocyclopentadiene	77-47-4	2
2,4,6-Trichlorophenol	88-06-2	1.5
2,4,5-Trichlorophenol	95-95-4	1.5
2-Chloronapthalene	91-58-7	1.5
Acenapthylhene	208-96-8	1.5
Dimethyl phthalate	131-11-3	1.5
2,6-Dinitrotoluene	606-20-2	1
Acenaphthene	83-32-9	1.5
3-Nitroaniline	99-09-2	2.5
Dibenzofuran	132-64-9	1
2,4-Dinitrophenol	51-28-5	(15)
2,4-Dinitrotoluene	121-14-2	1

TABLE C (Cont.)
SAS DRINKING WATER
SEMIVOLATILE QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Fluorene	86-73-7	1 ug/L
4-Nitrophenol	100-02-7	1.5
4-Chlorophenyl phenyl ether	7005-72-3	1
Diethyl phthalate	84-66-2	1
4,6-Dinitro-2-methylphenol	534-52-1	(15)
1,2-Diphenylhydrazine	122-66-7	1
n-Nitrosodiphenylamine *	86-30-6	
Diphenylamine *	122-39-4	1.5
4-Nitroaniline	100-01-6	3
4-Bromophenyl-phenylether	101-55-3	1.5
Hexachlorobenzene	118-74-1	1.5
Pentachlorophenol	87-86-5	2
Phenanthrene	85-01-8	1
Anthracene	120-12-7	2.5
di-n-Butyl phthalate	84-74-2	2
Fluoranthene	206-44-0	1.5
Pyrene	129-00-0	1.5
Butyl benzyl phthalate	85-68-7	3.5
Chrysene **	218-01-9	
Benzo(A)Anthracene **	56-55-3	1.5
bis(2-ethylhexyl)phthalate	117-81-7	1
di-n-Octyl phthalate	117-84-0	1.5
Benzo(b)fluoranthene ***	205-99-2	
Benzo(k)fluoranthene ***	207-08-9	1.5
Benzo(a)pyrene	50-32-8	2
Indeno(1,2,3-cd)pyrene	193-39-5	3.5
Dibenzo(a,h)anthracene	53-70-3	2.5
Benzo(g,h,i)perylene	191-24-2	4
2-Nitroaniline	88-74-4	1

* These two parameters are reported as a total.
** These two parameters are reported as a total.
*** These two parameters are reported as a total.

( ) Values in parentheses are estimates.
The actual values are being determined at this time.

Note: Limits are for reagent water.

TABLE C (Cont.)
SAS DRINKING WATER
PESTICIDE AND PCB QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Aldrin	309-00-2	0.005 ug/L
alpha BHC	319-84-6	0.010
beta BHC	319-85-7	0.005
delta BHC	319-86-8	0.005
gamma BHC (Lindane)	58-89-9	0.005
alpha-Chlordane	5103-71-9	0.020
gamma-Chlordane	5103-74-2	0.020
4,4'-DDD	72-54-8	0.020
4,4'-DDE	72-55-9	0.005
4,4'-DDT	50-29-3	0.020
Dieldrin	60-57-1	0.010
Endosulfan I	959-98-8	0.010
Endosulfan II	33213-65-9	0.010
Endosulfan sulfate	1031-07-8	0.10
Endrin	72-20-8	0.010
Endrin Aldehyde	7421-93-4	(0.030)
Endrin Ketone	53494-70-5	0.030
Heptachlor	76-44-8	0.030
Heptachlor Epoxide	1024-57-3	0.005
4,4'-Methoxychlor	72-43-5	0.020
Toxaphene	8001-35-2	0.25
Aroclor-1016	12674-11-2	0.10
Aroclor-1221	11104-28-2	0.10
Aroclor-1232	11141-16-5	0.10
Aroclor-1242	53469-21-9	0.10
Aroclor-1248	12672-29-6	0.10
Aroclor-1254	11097-69-1	0.10
Aroclor-1260	11096-82-5	0.10

( ) Values in parentheses are estimates.
Actual values are being determined at this time.

Note: Limits are for reagent water.

TABLE C (Cont.)
SAS DRINKING WATER
INORGANIC DETECTION LIMITS

PARAMETER	PROCEDURE	DETECTION LIMIT
Aluminum	ICP	100
Antimony	GFAA	5
Arsenic	GFAA	5
Barium	ICP	50
Beryllium	ICP	5
Cadmium	GFAA	0.5
Calcium	ICP	1000
Chromium	ICP	10
Cobalt	ICP	10
Copper	ICP	10
Iron	ICP	100
Lead	GFAA	2
Magnesium	ICP	1000
Manganese	ICP	10
Mercury	Cold Vapor	0.2
Nickel	ICP	20
Potassium	ICP	2000
Selenium	GFAA	2
Silver	ICP	5
Sodium	ICP	1000
Thallium	GFAA	2
Tin	ICP	40
Vanadium	ICP	10
Zinc	ICP	20
Cyanide	Colorimetric	10

Note: The above list may or may not contain compounds that are routinely analyzed at CRL for lov level detection limits for drinking vater.

See inorganic Routine Analytical Services (RAS) for related CAS #.

E

APPENDIX E

WELL LOGS OF THE AREA OF THE SITE

WELL LOG 1

219181 107- 7-22ADDCAD

****

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 219181
WELL NAME : CITY OF WINONA 5

COUNTY : WINONA DATE ENTERED:
ADDRESS : JOHNSON ST. PUMPING STATION WINONA
QUADRANGLE: WINONA WEST 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 608829
RANGE : 7 WEST UTM-NORTHING: 4878842
SECTION : 22/ADDCAD UTM-ZONE : 15
LATITUDE : 44:03:23 N LONGITUDE : 91:38:28 W
LOCATED BY:

ELEVATION : 655 FT. WATER LEVEL : 13 FT. (EL. 642 FT.)
DEPTH : 501 FT. DATE : 27/05/14
COMPLETED : 24/07/19 AQUIFER(S) : MT.SIMON-
: LOWER PC GRANITE PLUTON

WELL USE : PUBLIC SUPPLY
DRILLER : (AND/OR DATA SOURCE) MCCARTHY WELL CO.
CASING : STEP DOWN
: 016 INCH TO 0160 FEET
SCREEN
MAKE/TYPE: NONE

PUMP
SIZE : 00050 HP. -NA- VOLTS CAPACITY : -NA- G.P.M.
TYPE : L.S. TURBINE DROP PIPE : -NA- FT.

PUMPAGE TEST

DATE: 27/05	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6
HOURS	006					
RATE(GPM)	0727					
DRAWDOWN(FT)	162					

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 160	SAND,GRAVEL	FLUVIAL DEPOSIT	QUA			SAND & GRAVEL DRIFT
160 325	SANDSTONE	MT.SIMON	CAM			LIGHT SANDROCK
325 330	SHALE	MT.SIMON	CAM			BLUE & RED CLAY
330 377	SANDSTONE	MT.SIMON	CAM			SAND ROCK
377 380	SANDSTONE,SHALE	MT.SIMON	CAM			RED SAND SHALE
380 414	SHALE	MT.SIMON	CAM			RED SHALE ROCK

(CONTINUED)

M.G.S. WATER WELL DATA BASE
UNIQUE NO. 219181 - GEOLOGIC LOG (CONTINUED)

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
380 414	SHALE	MT.SIMON	CAM			RED SHALE ROCK
414 450	SANDSTONE	MT.SIMON	CAM			COARSE SANDROCK
450 477	SANDSTONE	MT.SIMON	CAM			HARD SANDROCK
477 488	SANDSTONE,SHALE	MT.SIMON	CAM			SAND SHALE
488 491	GRANITE	LOWER PC GRANITE PLUTON	PCW			BLACK GRANITE-VERY HARD
491 501	GRANITE	LOWER PC GRANITE PLUTON	PCW			BLACK GRANITE-VERY HARD

****

WELL LOG 2

218084 107- 7-23CBBAAC

****

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 218084
WELL NAME : CITY OF WINONA 2

COUNTY : WINONA DATE ENTERED:
ADDRESS : WINONA
QUADRANGLE: WINONA WEST 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 609105
RANGE : 7 WEST UTM-NORTHING: 4878730
SECTION : 23/CBBAAC UTM-ZONE : 15
LATITUDE : 44:03:20 N LONGITUDE : 91:38:16 W
LOCATED BY:

ELEVATION : 657 FT. WATER LEVEL : UNKNOWN
DEPTH : 503 FT. DATE : / /
COMPLETED : 15/00/00 AQUIFER(S) : MT.SIMON

WELL USE : PUBLIC SUPPLY
DRILLER : (AND/OR DATA SOURCE) M.G.S.
CASING : DATA UNAVAILABLE
SCREEN : DATA UNAVAILABLE
PUMP : DATA UNAVAILABLE

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)		LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0	132		NO RECORD				NO RECORD
132	151	GRAVEL	FLUVIAL DEPOSIT	QUA			COARSE GRAVEL
151	152	CLAY,GRAVEL	FLUVIAL DEPOSIT	QUA			CLAY, HARD PAN & SANDROCK
152	195	SANDSTONE	MT.SIMON	CAM			SOFT SANDSTONE
195	235	SANDSTONE	MT.SIMON	CAM			HARDER SANDSTONE
235	325	SANDSTONE	MT.SIMON	CAM			FINE SOFT SANDSTONE
325	350	SHALE,SANDSTONE	MT.SIMON	CAM			CLAY & HARD SANDSHALE
350	355	SHALE,SANDSTONE	MT.SIMON	CAM			BRICK RED CUTTINGS
355	400	SANDSTONE	MT.SIMON	CAM			SANDROCK, HARD
400	402	SANDSTONE	MT.SIMON	CAM			REDDISH SANDROCK
402	425	SANDSTONE	MT.SIMON	CAM			VERY HARD SANDROCK
425	430	SANDSTONE,SHALE	MT.SIMON	CAM			SOFTER SANDROCK W/SHALE
430	443	SANDSTONE	MT.SIMON	CAM			VERY HARD WHITE SANDROCK
443	472	SANDSTONE	MT.SIMON	CAM			HARD RED SANDROCK
472	490	SANDSTONE	MT.SIMON	CAM			VERY HARD GRAY SANDROCK
490	496	SANDSTONE	MT.SIMON	CAM			WHITE SANDROCK
496	503	GRANITE	LOWER PC GRANITE PLUTON	PCW			BLACK GRANITE

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219072 107- 7-26BCBCBB

WELL LOG 3

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 219072
WELL NAME : C.M. & ST. PAUL R.R. CO.

COUNTY : WINONA DATE ENTERED:
ADDRESS : WINONA
QUADRANGLE: WINONA WEST 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 609016
RANGE : 7 WEST UTM-NORTHING: 4877471
SECTION : 26/BCBCBB UTM-ZONE : 15
LATITUDE : 44:02:39 N LONGITUDE : 91:38:21 W
LOCATED BY:

ELEVATION : 655 FT. WATER LEVEL : -9 FT. (EL. 664 FT.)
DEPTH : 373 FT. DATE : 06/02/05
COMPLETED : 06/02/05 AQUIFER(S) : MT.SIMON

WELL USE : INDUSTRY
DRILLER : (AND/OR DATA SOURCE) U.S.G.S.
CASING : STEP DOWN
: 010 INCH TO 0148 FEET
: 008 INCH TO 0222 FEET
: 006 INCH TO 0373 FEET
SCREEN : DATA UNAVAILABLE
PUMP
SIZE : 00010 HP. -NA- VOLTS CAPACITY : -NA- G.P.M.

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 148	SAND,GRAVEL	FLUVIAL DEPOSIT	QUA			SAND & GRAVEL
148 373	SANDSTONE	MT.SIMON	CAM			SANDSTONE

219106 107- 7-25BDABCA

WELL LOG 4

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 219106
WELL NAME : DIVERSIFIED FABRICATORS

COUNTY : WINONA DATE ENTERED:
ADDRESS : 978 E 4TH ST. WINONA
QUADRANGLE: WINONA EAST (WIS) 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 611224
RANGE : 7 WEST UTM-NORTHING: 4877563
SECTION : 25/BDABCA UTM-ZONE : 15
LATITUDE : 44:02:41 N LONGITUDE : 91:36:42 W
LOCATED BY:

ELEVATION : 660 FT. WATER LEVEL : UNKNOWN
DEPTH : 360 FT. DATE : / /
COMPLETED : 67/06/00 AQUIFER(S) : UNKNOWN

WELL USE : INDUSTRY
DRILLER : (AND/OR DATA SOURCE) SCHUELER WELL CO.
CASING : STEP DOWN
: 004 INCH TO FEET
SCREEN : DATA UNAVAILABLE
PUMP : DATA UNAVAILABLE

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 160	SAND,GRAVEL	FLUVIAL DEPOSIT	QUA			SAND & GRAVEL
160 270	SHALE	DRESBACHIAN STAGE	CAM			BLUE SHALE
270 360	SANDSTONE	MT.SIMON	CAM			WHITE SANDSTONE

218086 107- 7-25DBDDAB

WELL LOG 5

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 218086
WELL NAME : PEERLESS CHAIN

COUNTY : WINONA DATE ENTERED:
ADDRESS : SANBORN ST. WINONA
QUADRANGLE: WINONA EAST (WIS) 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 611752
RANGE : 7 WEST UTM-NORTHING: 4876913
SECTION : 25/DBDDAB UTM-ZONE : 15
LATITUDE : 44:02:19 N LONGITUDE : 91:36:18 W
LOCATED BY: INFO. FROM NEIGHBOR

ELEVATION : 661 FT. WATER LEVEL : UNKNOWN
DEPTH : 511 FT. DATE : / /
COMPLETED : / / AQUIFER(S) : UNKNOWN

WELL USE : UNKNOWN
DRILLER : (AND/OR DATA SOURCE) MCCARTHY WELL CO.
CASING : STEP DOWN
: 016 INCH TO FEET
SCREEN : DATA UNAVAILABLE
PUMP : DATA UNAVAILABLE

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 34	SAND	FLUVIAL DEPOSIT	QUA			SAND
34 56	CLAY	QUATERNARY UNDIFF.	QUA			CLAY LAYER
56 110	CLAY	QUATERNARY UNDIFF.	QUA			MUCKY CLAY
110 165	SAND	GRAY FLUVIAL DEPOSIT	QUA		BLUE	FINE SAND
165 170	SHALE	EAU CLAIRE	CAM			SOFT SHALE
170 190	SANDSTONE	EAU CLAIRE	CAM			SANDSTONE
190 194	SHALE	EAU CLAIRE	CAM		BLUE	SHALE
194 220	SANDSTONE,SHALE	EAU CLAIRE	CAM			ALT. BEDS OF SANDSTONE & SHALE
220 228	SANDSTONE	MT.SIMON	CAM			COARSE SANDSTONE
228 511	SANDSTONE,SHALE	MT.SIMON	CAM			SANDSTONE & SOME SHALE
511 511	DIORITE	LOWER PC GRANITE PLUTON	PCW			GRANITE

103428 107- 7-35AADBAC

WELL LOG 6

MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 103428
WELL NAME : LAMBERT KOWALEWSKI

COUNTY : WINONA DATE ENTERED:
ADDRESS : 75 FT. N. OF OLD HWY ONE WINONA
QUADRANGLE: WINONA EAST (WIS) 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 610464
RANGE : 7 WEST UTM-NORTHING: 4876167
SECTION : 35/AADBAC UTM-ZONE : 15
LATITUDE : 44:01:56 N LONGITUDE : 91:37:17 W
LOCATED BY: INFO. FROM NEIGHBOR

ELEVATION : 650 FT. WATER LEVEL : 18 FT. (EL. 632 FT.)
DEPTH : 120 FT. DATE : 79/10/02
COMPLETED : 79/10/02 AQUIFER(S) : EAU CLAIRE

WELL USE : IRRIGATION
DRILLER : (AND/OR DATA SOURCE) SCHUELER WELL CO.
CASING : STEP DOWN
: 004 INCH TO 0045 FEET

SOURCE OF POSSIBLE CONTAMINATION
FEET: 00200 DIRECTION: EAST TYPE: SEPTIC TANK
SCREEN
MAKE/TYPE: NONE

PUMP : DATA UNAVAILABLE

PUMPAGE TEST

DATE: 79/10	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6
HOURS	002					
RATE(GPM)	0020					
DRAWDOWN(FT)	022					

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 45	SAND,CLAY	QUATERNARY UNDIFF.	QUA	SOFT	LBROWN	SAND & CLAY
45 98	SANDSTONE	EAU CLAIRE	CAM	HARD	BROWN	SANDSTONE
98 110	SANDSTONE	EAU CLAIRE	CAM	HARD	WHITE	SANDSTONE
110 120	SHALE	EAU CLAIRE	CAM	HARD	BLUE	SHALE

226590 107- 7-36CCCAAC

WELL LOG 7

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MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 226590
WELL NAME : ST. MARYS CEMETERY

COUNTY : WINONA DATE ENTERED:
ADDRESS : WINONA
QUADRANGLE: WINONA EAST (WIS) 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 610767
RANGE : 7 WEST UTM-NORTHING: 4874973
SECTION : 36/CCCAAC UTM-ZONE : 15
LATITUDE : 44:01:17 N LONGITUDE : 91:37:04 W
LOCATED BY: INFO. FROM OWNER

ELEVATION : 673 FT. WATER LEVEL : UNKNOWN
DEPTH : 230 FT. DATE : / /
COMPLETED : 56/10/11 AQUIFER(S) : DRESBACHIAN STAGE-
: MT.SIMON

WELL USE : PUBLIC SUPPLY
DRILLER : (AND/OR DATA SOURCE) HASSE WELL CO.
CASING : STEP DOWN
: 006 INCH TO 0080 FEET
SCREEN
MAKE/TYPE: NONE

PUMP : DATA UNAVAILABLE

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 43	NO-RECORD	NO RECORD				NO RECORD
43 80	SHALE	EAU CLAIRE			CAM	BROKEN SHALE
80 205	NO-RECORD	NO RECORD				NO RECORD
205 230	SANDSTONE	MT.SIMON			CAM	SANDROCK

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235705 107- 7-36DCCBCC

WELL LOG 8

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MINNESOTA GEOLOGICAL SURVEY
WATER WELL DATA BASE. 87/08/15.

UNIQUE NO.: 235705
WELL NAME : DASHER PROPERTY

COUNTY : WINONA DATE ENTERED: 84/07/25.
ADDRESS :
QUADRANGLE: WINONA EAST (WIS) 7.5 MINUTE

TOWNSHIP : 107 NORTH UTM-EASTING : 611462
RANGE : 7 WEST UTM-NORTHING: 4874931
SECTION : 36/DCCBCC UTM-ZONE : 15
LATITUDE : 44:01:15 N LONGITUDE : 91:36:33 W
LOCATED BY:

ELEVATION : 660 FT. WATER LEVEL : UNKNOWN
DEPTH : 307 FT. DATE : 84/06/19
COMPLETED : / / AQUIFER(S) : UNKNOWN

WELL USE : UNKNOWN
DRILLER : (AND/OR DATA SOURCE) M.G.S.
CASING : STEP DOWN
: 005 INCH TO 0098 FEET
SCREEN : DATA UNAVAILABLE
PUMP : DATA UNAVAILABLE

REMARKS : PUMPAGE TEST DATA NOT AVAILABLE
GAMMA , ELECTRIC AND CALIPER LOGS AVAILABLE.
6 IN. OPEN HOLE FROM 98 TO 307 FEET.

GEOLOGIC LOG

DEPTH INTERVAL (IN FEET)	LITHOLOGY	STRATIGRAPHIC UNIT SYSTEM/GROUP/FORMATION	AGE	HARDNESS	COLOR	DRILLER'S DESCRIPTION
0 82	DRIFT	RECENT DEPOSIT	REC			DRIFT
82 196	SHALE	EAU CLAIRE	CAM			EAU CLAIRE
196 307	SANDSTONE	MT.SIMON	CAM			MT. SIMON

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